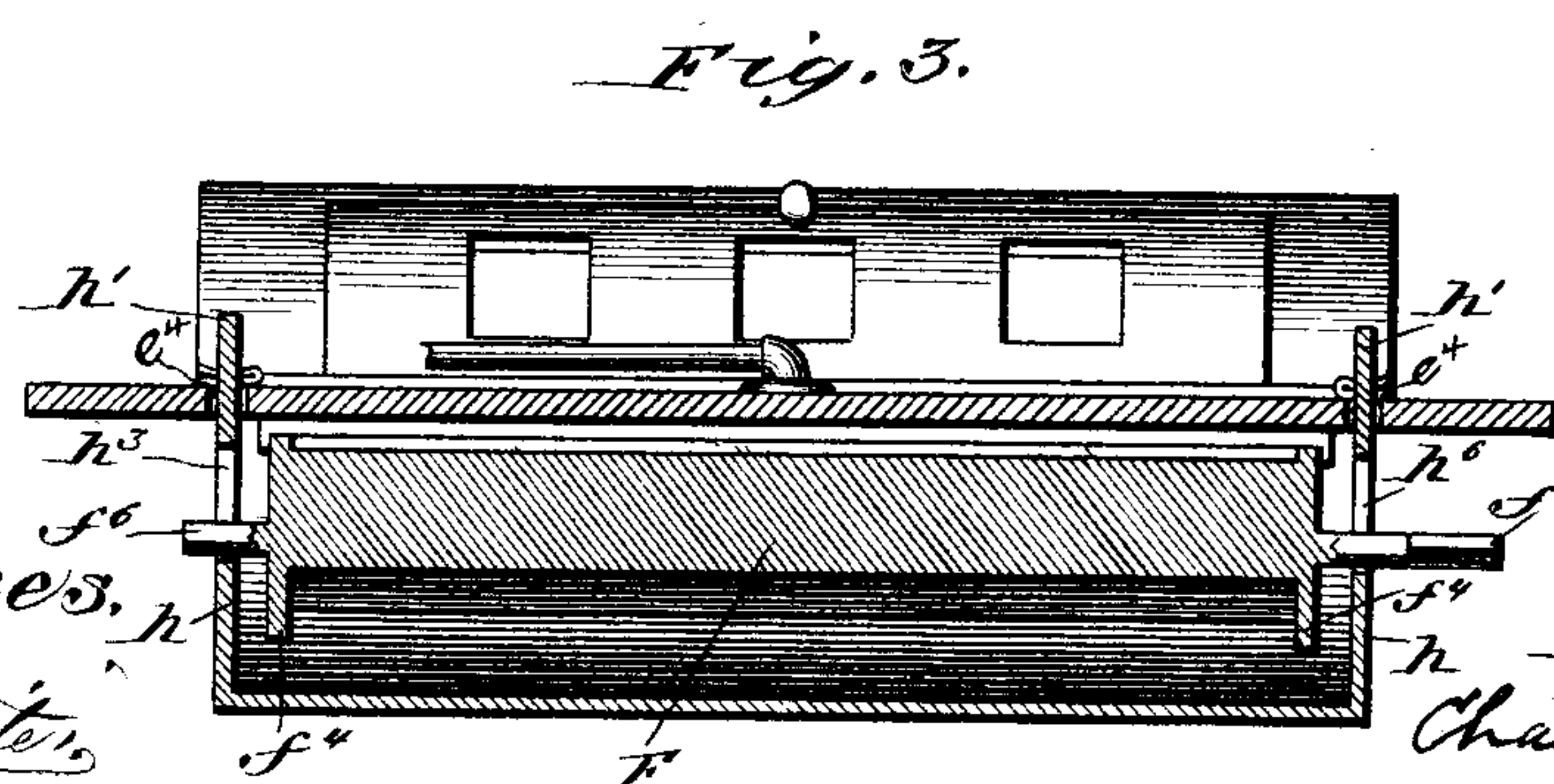
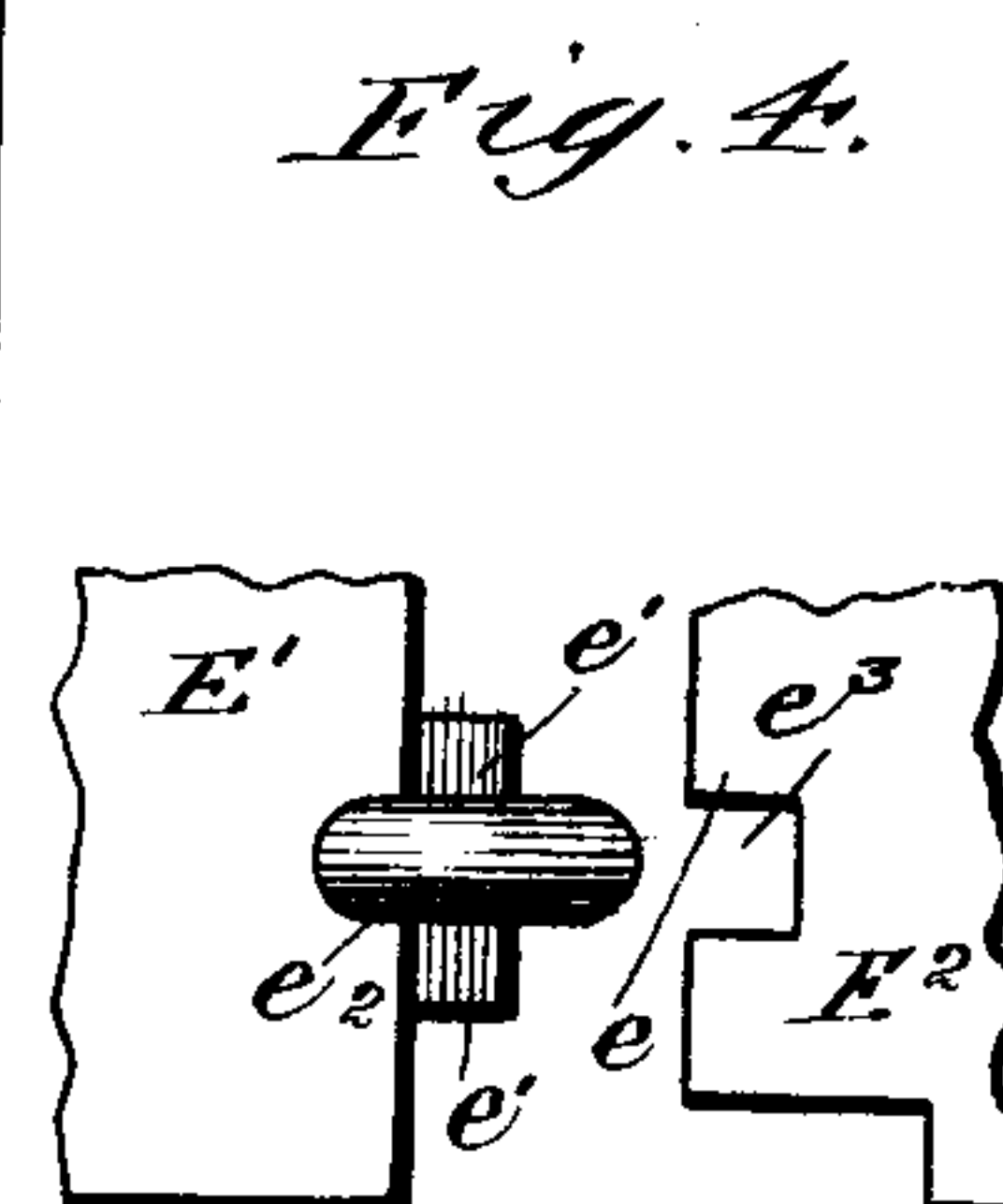
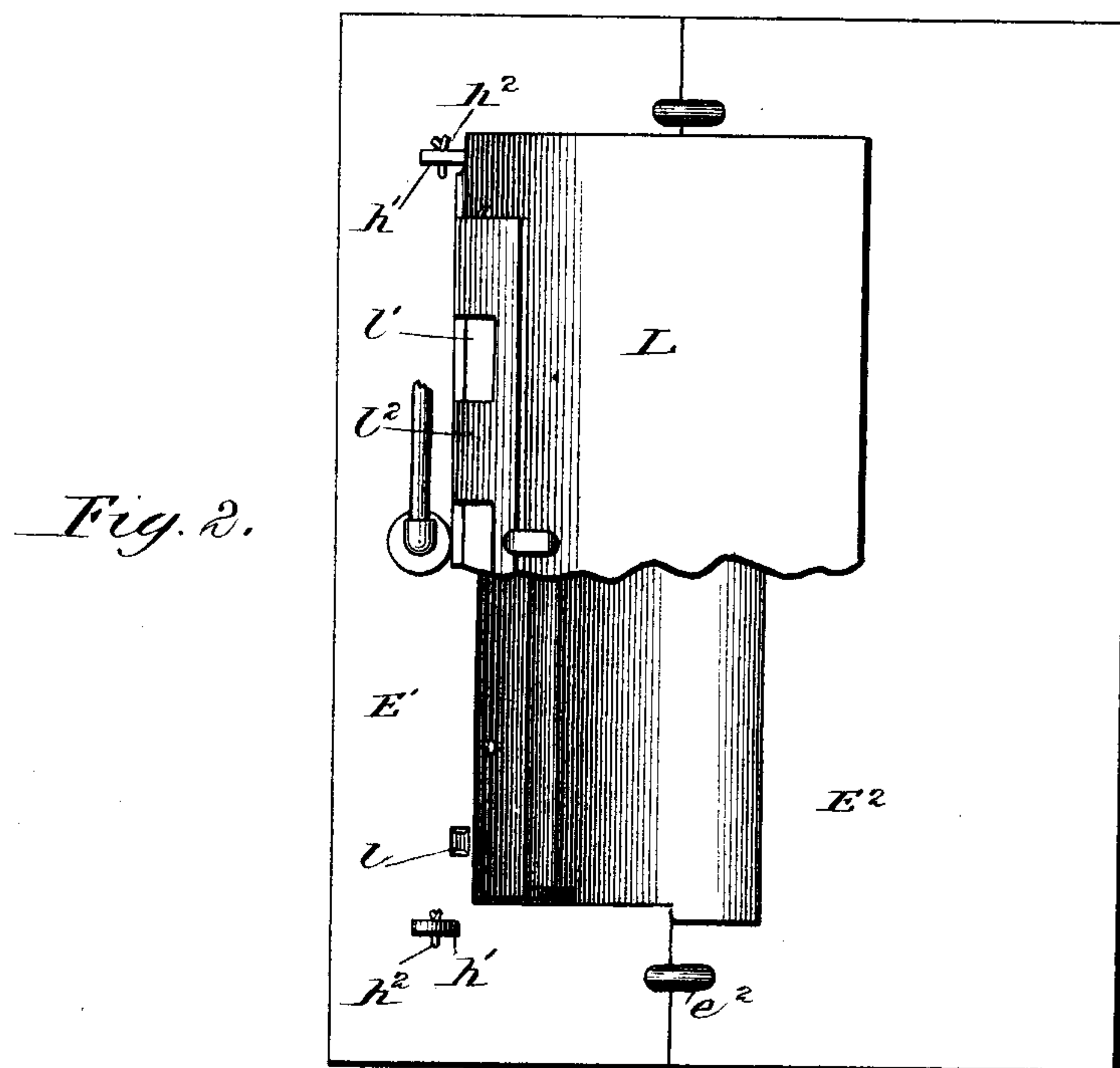
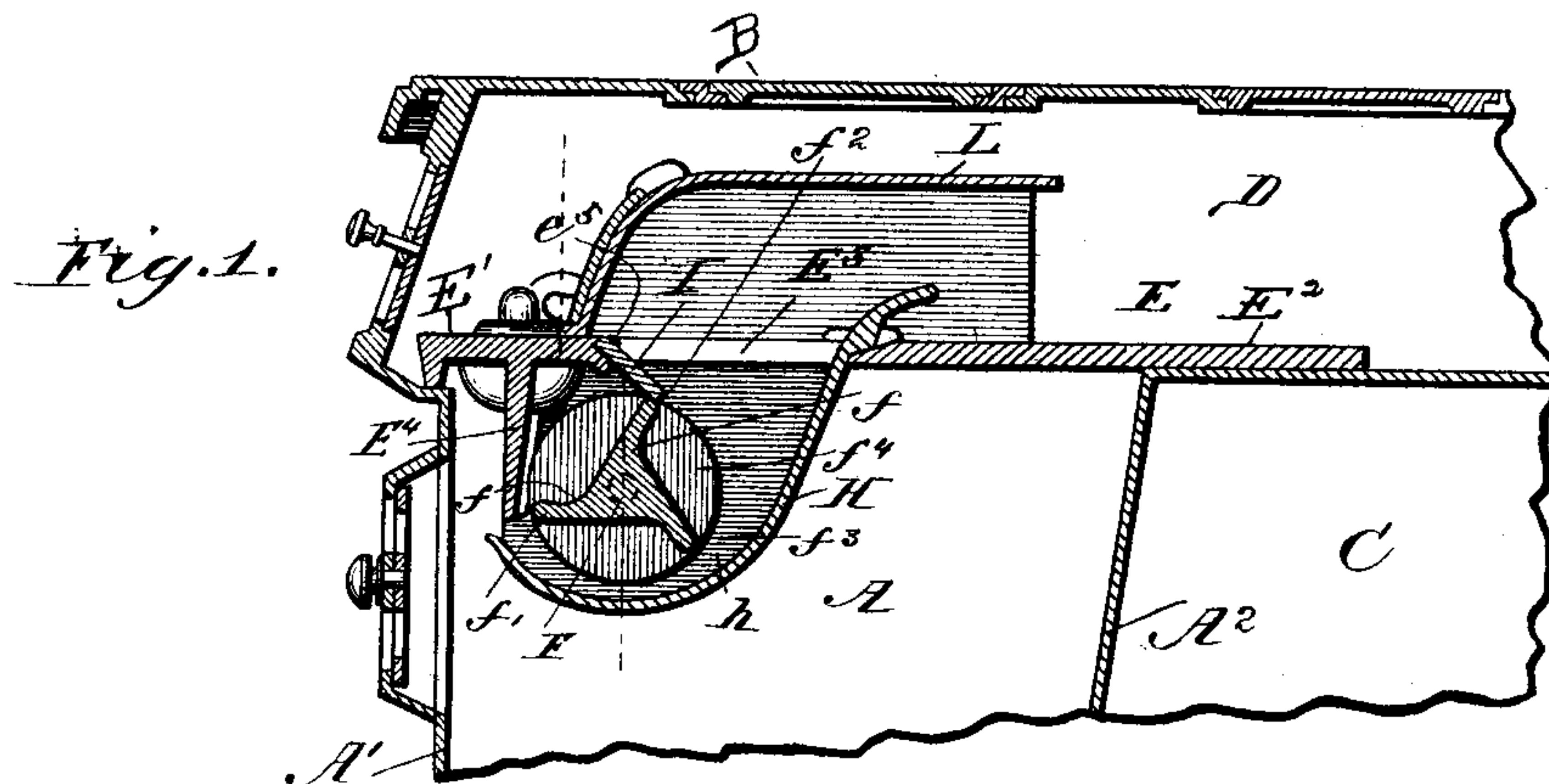


(No Model.)

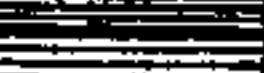
C. J. EDMONDS.
LIQUID FUEL BURNER.

No. 388,650.

Patented Aug. 28, 1888.



Witnesses, ²⁶
W. Foster,
Wm. R. Heem

 ⁵⁴
Inventor,
Chas. J. Edmonds,
By. Price & Fisher,
His Attys,

UNITED STATES PATENT OFFICE.

CHARLES J. EDMONDS, OF GRAND CROSSING, ILLINOIS.

LIQUID-FUEL BURNER.

SPECIFICATION forming part of Letters Patent No. 388,650, dated August 28, 1888.

Application filed February 17, 1887. Serial No. 227,918. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. EDMONDS, a citizen of the United States, residing at Grand Crossing, in the State of Illinois, have invented certain new and useful Improvements in Liquid-Fuel Burners, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention has relation to that class of liquid-fuel burners designed for use in connection with stoves or ranges, in which the fuel, usually a heavy hydrocarbon oil, is distributed upon a bar, commonly denoted in practice a "burner-bar," in such manner as to produce a broad sheet of flame, which serves to give the requisite heat to the stove or furnace.

The object of my present invention is, first, to provide an improved construction of burner-bar, and, second, to provide the burner with a deflecting-cover, which will serve not only as a means of directing the main body of the heat upon the top of the oven or against the top surface of the stove, but will also serve as a cooking-surface for certain culinary operations. These several objects I have attained by the novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly defined in the claims at the end of this specification.

Figure 1 is a view in central vertical section through my improved burner, showing the same in position within a fire-box of a stove. Fig. 2 is a plan view of the burner detached, parts being broken away. Fig. 3 is a view in vertical longitudinal section on line *xx* of Fig. 1. Fig. 4 is an enlarged detail plan view of the joint between the sections of the top plate.

My invention is shown in the accompanying drawings as applied to an ordinary cooking stove or range, although it will be readily seen that certain features thereof can be used in various other forms of stoves or furnaces.

A designates the fire-box of an ordinary cooking-stove, of which *A'* and *A''* denote, respectively, the front and bridge walls, and B and C indicate, respectively, the top of the stove or range and its oven, between which is the usual chamber, D, for the passage of the products of combustion.

Above the fire-box A, and completely cov-

ering the same, is what I designate the "top" or "supporting" plate, E, which rests upon the bridge-wall and front wall of the fire-box, this plate being preferably formed of the front section, *E'*, and rear section, *E''*, these sections being removably connected together by means of the lugs *e* of the plate *E''*, which rest upon the lugs *e'* of the plate *E'*, and are held in position thereon by means of the projecting lugs *e''*, which enter the slots *e'''* and sufficiently overlap the edges of the plate *E''* to firmly hold the sections of the plate against downward sagging. This form of top plate or cover for the fire-box forms part of the subject-matter of a separate application filed by me of even date herewith, and is here shown merely as a convenient means of supporting the burner-bar, although it will be readily understood that any other suitable means for sustaining such bar within the stove or furnace may be employed. The top plate, E, is provided with the opening *E'''*, extending across the same, the greater part of this opening being formed within the section *E'* of the plate, the purpose of this opening being to permit the burner-bar F to be readily set in position beneath the plate and to permit the products of combustion to pass over such burner-bar and through and over the top of the plate.

From the top plate, E, is suspended the deflecting plate or chamber H, the ends of which are closed by the vertical end plates, *h*, from the top of which rise the lugs *h'*, adapted to pass through the openings *e''* in the plate *E'*, and being provided with suitable perforations to receive the pins *h''*, which hold the lugs within the plate *E'*, and the upper rear part of this deflecting-plate H extends through the opening *E'''* of the top plate and rests upon and is sustained by the section *E''* of such plate.

It will be observed that the deflecting-plate H extends downwardly, behind and beneath the burner-bar F and preferably a slight distance in front of the front plate, *E'*, which is preferably formed integral with the section *E'* of the top plate and depends therefrom to near the bottom of the burner-bar and to within a slight distance of the front part of the deflecting-plate H. The burner-bar F is provided with several recesses, *f*—preferably three in number—these recesses extending lengthwise

the burner-bar and being of such shape as to form the intermediate ribs, $f' f^2 f^3$, the edges of those bars being preferably slightly upturned, as shown, so as to form a distributing-ledge from end to end of the bar for the liquid fuel. At the ends of the several ribs of the burner-bar are formed the end plates, f^1 , which serve to close the ends of the several recesses of the bar.

10 In the end plates, h , of the deflecting plate or chamber H are formed the journal-bearing slots h^3 , within which are held the journals f^6 and f^7 of the burner-bar, and it will be observed that the journal f^7 is provided preferably with the squared end adapted to fit within a key for the purpose of changing the position of the burner-bar, as will be presently explained.

20 The upper edge of the section E' of the top plate is provided with the studs or projections e^5 , which serve to sustain the guard-plate I, that extends through the opening E³ of the top plate, and is furnished with suitable perforations adapted to fit over the studs and be sustained thereby in a manner permitting to this guard-plate a slight swinging movement in vertical direction, and the lower end of this guard-plate I rests upon the end plates, f^4 , of the burner-bar. The liquid fuel is delivered to the burner-bar through the inlet pipe or opening G, which receives its supply from the chamber G', preferably cast on the under side of the section E' of the top plate, and a pipe, G², leads from this chamber G' to the main source of fuel-supply. It will be seen that the slightly-upturned edges of the several ribs of the burner-bar are a trifle higher at the center than at the extremities, the purpose of this construction being to cause a more even flow of the oil over the distributing-edges of the ribs.

From the description of the apparatus as thus far defined it will be seen that when the liquid fuel is admitted through the delivery-pipe and upon one of the ribs of the burner-bar at such time beneath said pipe it will flow along such rib, by reason of the slightly-upturned edge thereof, and will be distributed in a thin film over the edge of such rib. If now the fuel be lighted, it will be found that the volume of air passing in an even sheet through the front opening between the depending front plate, E', and front of the deflecting-plate H will cause a uniform and violent combustion of the fuel along the entire edge of the burner-bar adjacent this opening. This sheet of flame will be forced by the draft through the narrow space between the deflecting-plate H and the burner-bar, and will be discharged above the top plate, E, where the gases will be allowed to expand and complete combustion will occur. My purpose in forming the burner-bar with several recesses and ribs therein is not only to give to such bar a shape which will enable it to best restrict any tendency to become warped by reason of the excessive heat, but also to provide a series of distributing-edges

or burning-points for the liquid fuel, so that after the bar has been used in one position for a time it can be readily given a partial revolution, so as to bring another distributing-edge of the bar into proper position for use. It will be readily seen that this turning of the burner-bar from time to time, as required, can be readily effected by means of a suitable crank-key upon the squared end of the journal of such bar. A further advantage resulting from this form of burner-bar is that while one of the ribs is in use for properly distributing the liquid fuel the intensely-heated flame will impinge against the rib previously used and burn off from the same any deposits that may have accumulated thereon. My purpose in placing the guard-plate I above the burner-bar is to prevent the products of combustion from passing around in front of such bar, and it will be seen that by attaching this guard-plate in such manner that it can swing and can be removed from the top plate, E, it will not interfere either with the revolution of the burner-bar or with the removal of such bar from the stove when necessary.

Above the section E' of the top plate, E, is placed what I designate the "deflecting cover" or "hood" L, the lower front edge of this hood being furnished with suitable feet adapted to rest in corresponding sockets l , formed in the top plate, E. The front face of this deflecting-cover L is provided with a series of openings, l' , therein, adapted to be opened or closed by the register-valve l^2 , and the upper portion of this deflecting cover or hood is extended backwardly, preferably beyond the first row of pot-holes in the stove-top and at the back or beyond the rear edge of the opening E³, that is formed in the top plate, E, for the passage of the products of combustion. The purpose of this deflecting-cover is, first, to cause the products of combustion to exert the greatest heat upon the top of the oven or stove top, as desired; and, second, to afford a ready means whereby such culinary operations as broiling, toasting, and the like may be readily performed without danger of imparting to the food the odor of the fuel; and it will be seen that when the register-valve is in closed position the volume of flame passing upward through the opening E³ in the top plate, E, will impinge against the under side of the deflecting-cover L and impart thereto a heat so intense that this plate will serve the purpose of live coals in ordinary culinary operations. If, however, the register-valve in the front part of the deflecting cover or hood L be opened, the volume of air thereby admitted will cause the flame to be borne downward against the top of the oven, to which the greatest heat from the combustion of the fuel will thus be imparted.

I do not wish to be understood as claiming in this application any portion of the subject-matter set out in an application filed by me February 17, 1887, Serial No. 227,917.

It will be readily understood that the details of construction above defined may be varied

by the skilled mechanic without departing from the spirit of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the fire-box of a stove or furnace, of a liquid-fuel burner comprising a suitable fuel-delivery pipe, and a burner-bar extending from end to end of the fire-box and movably sustained therein, and provided upon its exterior with ribs adapted to receive and distribute the fuel, substantially as described.

2. In a liquid-fuel burner, the combination, with a suitable fuel-delivery pipe and with suitable supports, of a burner-bar journaled in said supports and provided with a series of longitudinal ribs having slightly-upturned distributing-edges, substantially as described.

3. In a liquid-fuel burner, the combination, with a suitable fuel-delivery pipe and with suitable supports, of a burner-bar journaled in said supports and provided with a series of recesses, f , and intermediate ribs, f' f'' f''' , substantially as described.

4. In a liquid-fuel burner, the combination, with a suitable fuel-delivery pipe and suitable supports, of a burner-bar, F , journaled in said supports and provided with the longitudinal recesses f , the intermediate ribs, and the end plates, f''' , substantially as described.

5. In a liquid-fuel burner, the combination, with a suitable top plate, E , and deflecting-

plate II , of the end plates, h , and the burner-bar F , removably journaled in said end plates, substantially as described.

6. In a liquid-fuel burner, the combination, with the top plate, E , of the burner-bar F , suitable supports wherein said burner-bar is removably journaled, and a guard-plate, I , substantially as described.

7. In a liquid-fuel burner, the combination, with a suitable plate, E , arranged over the fire-box, and a suitable burner-bar beneath said plate, of a deflecting-cover located above the top plate and extending over the burner-bar, substantially as described.

8. In a liquid-fuel burner, the combination, with the top plate, E , having an opening, E^3 , therein, and a burner-bar beneath said opening, of a deflecting-cover, L , extending backwardly over the opening E^3 on the top plate, E , substantially as described.

9. In a liquid-fuel burner, the combination, with a suitable top plate, E , having an opening, E^3 , therein for products of combustion, and having a suitable burner-bar beneath said opening, of a deflecting-cover, L , extending above said opening in the top plate and provided at its front with a register-valve, substantially as described.

CHARLES J. EDMONDS.

Witnesses:

GEO. P. FISHER, Jr.,
JAMES H. PEIRCE.